

# Leonardo Da Vinci



*"Learning never exhausts the mind"*

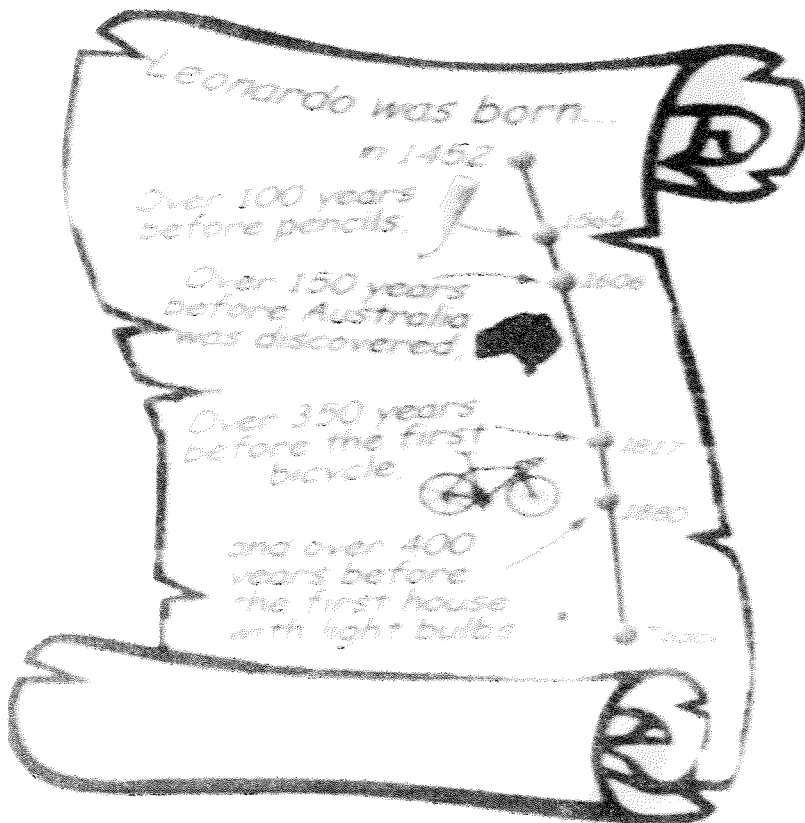
MINISTERIO  
DE  
EDUCACIÓN  
& BRITISH  
COUNCIL  
BILINGUAL  
PROJECT

NAME:

TEXT 1

## *Leonardo Da Vinci*

Leonardo was born in Italy, in the small village of Vinci, near Florence. He was born so long ago (over 500 years ago) that it can be hard to grasp the importance of the things he did. Today we are so used to them that they don't seem that special.



Look at the time line above and indicate whether each of these sentences are true (T) or false (F): (6 marks)

1. Leonardo used pencils to draw.
2. The first bicycle was invented 350 years ago.
3. The first house with light bulbs was built 400 years before Leonardo was born.
4. Australia was discovered 150 years after Leonardo was born.
5. Leonardo was born in the 15<sup>th</sup> century.
6. Christopher Columbus reached America in 1492, 40 years after Leonardo was born.

## Text 2

Leonardo da Vinci was a genius. The fact that he was an artistic genius would be hard to disagree with because he painted one of the most famous paintings in the world today--- The Mona Lisa. There are other artists who were also geniuses, but the thing that sets Leonardo apart from them is that he was a genius scientist, an engineer and inventor as well. He was also brilliant at maths, music and making maps. He was an excellent athlete and a fine musician. He was a polymath, which is someone who knows lots of different subjects well. "Poly" means "many" in Greek.



When Leonardo was twelve he became an apprentice in the studio of Andrea del Verrocchio, one of the most famous artists working in Florence at the time. There he learned to draw, paint pictures, make statues and even to design buildings. Soon he began to do important works of art for rich people. Some famous paintings are *The Annunciation*, *The Last Supper* and *The Mona Lisa*.

Florence was an exciting place to live. It was full of new ideas. A machine to print books, a printing press, had just been invented by a German man called Gutenberg, so Leonardo started buying and collecting books. He couldn't attend a university but he could teach himself by reading.

Leonardo also spent hours observing nature: the water ripples on a river, the patterns of wind in a storm, the way light hits a surface, the flight of birds and much more. Everywhere he went, Leonardo took a little notebook with him and he made drawings of anything that interested him. He just would not stop trying to answer questions. Once Leonardo understood how things worked he then used his knowledge to invent and build things.

## Text 2 Questions.

Read text two. Now answer the questions below.

1. What is the thing that sets Leonardo apart from other artistic geniuses?  
(1mark)

\_\_\_\_\_

2. Write the word from the text that explains that Leonardo was good at many subjects like painting, music, science, athletics etc. (1 mark)

\_\_\_\_\_

3. When Leonardo was \_\_\_\_\_ years old he began to learn about drawing and painting. (1 mark)

4. He became an apprentice which in Leonardo's time was: ( 1 mark)

a) Someone who created works of Art by copying other artists' works.

b) Someone who was learning to be an artist and was taught in the studio of a real artist.

c) Someone who learned to paint and draw.

5. What did Leonardo use his notebook for? (1 mark)

\_\_\_\_\_

\_\_\_\_\_

6. Circle the adjectives which best describe Leonardo da Vinci. (3 marks)

Talented    unable    curious    uninterested    brilliant    simpleminded

7. Find the words for these definitions in the text : ( 5 marks)

1- A machine to print books invented in Leonardo's time \_\_\_\_\_

2- The city where Leonardo started to paint \_\_\_\_\_

3- The name of the artist who owned the studio where Leonardo first learned to draw and paint. \_\_\_\_\_

4- The name of a painting by Leonardo in which a smiling woman is depicted. \_\_\_\_\_

5- An effect caused by an object being dropped into water. \_\_\_\_\_

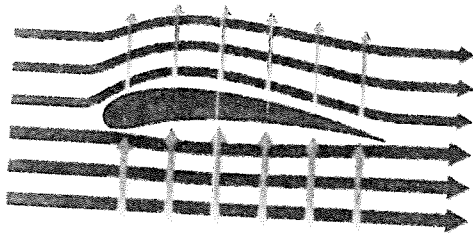
### Text 3

#### FLIGHT

Leonardo had an unusual habit of buying birds in cages and then setting them free. He did this because he was obsessed with how birds flew.

But, how do birds fly?

We now know that: All birds have wings, but not all birds fly. Most birds do fly, but some run fast or swim well, on or under the water. Many birds can do more than one of these things.



To assist with flying, there are two main flight muscles on each wing, and 48 other muscles within the wings and shoulders. It is the shape of a bird's wing that helps it fly. The shape of the wing is called an aerofoil: the wing isn't flat, but curved. Air splits in two around the wing: some passes over the top of the wing and the rest passes underneath. The air going above has further to go and speeds up. The air passing below the wing goes slower, creating lift and pushing the wing up. In addition to using lift to overcome gravity, birds must also use thrust to push themselves forward.

Gravity is the force that draws things to the ground. For example, if you let go of something, it falls to the ground. Drag is the force that slows things down. For example, if you put your hand out of the window of a moving car, you can feel drag.

Lift is what pushes the bird upwards, away from the ground. Lift overcomes gravity. The aerofoil shape of their wings helps them produce lift. Thrust is the force that overcomes drag and pushes the bird forwards through the air.

Birds don't flap their wings straight up and down. When the wing goes upward, the tip moves slightly backwards. When the wing goes downwards, the tip moves forwards slightly and the wing feathers twist slightly. Air passing over the top of the twisted feathers creates a forward push, or thrust.

### Text 3 Questions.

Read Text 3 and answer the questions below:

1. Read the following three sentences and circle the one that is true . (2 marks)
- a) It's the shape of a bird's wing that helps it fly. The wing is flat and air splits in two around the wing: some passes over the top of the wing and the rest passes underneath.
  - b) The wing of a bird is curved; air moving over the wings pulls the bird forwards and air moving below pushes the bird up and down.
  - c) Air splits in two around the curved wing of a bird: some passes more quickly over the top of the wing and the rest passes more slowly underneath. This difference in the speed of the air creates lift.

2. Numbers two and 48 appear in text 3. What do they relate to? (2 marks)

Two are \_\_\_\_\_  
48 is \_\_\_\_\_

3. What is an aerofoil? (1 mark)

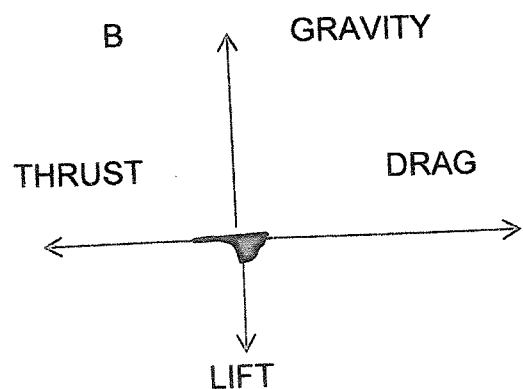
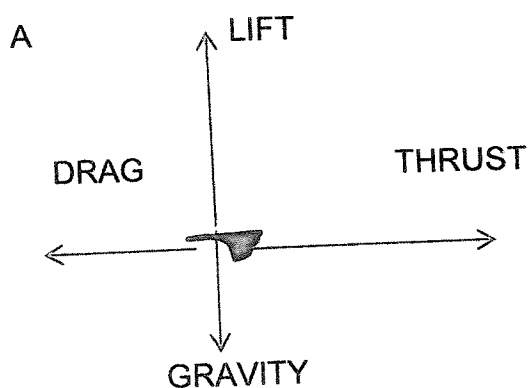
\_\_\_\_\_

4. Match the name of the 4 forces that act upon a bird's wings to its definition: (4 marks)

- |  |            |
|--|------------|
| 1. The force that slows things down.   | a) GRAVITY |
| 2. The force that pushes the bird upwards.                                     | b) DRAG    |
| 3. The force that draws things to the ground.                                  | c) THRUST  |
| 4. The force that overcomes drag and pushes the bird forwards through the air. | d) LIFT    |

1\_\_\_\_, 2\_\_\_\_, 3\_\_\_\_, 4\_\_\_\_\_.

5. Which one is the correct diagram that shows the forces that act upon a bird's body when flying? (Circle A or B) (4 marks)



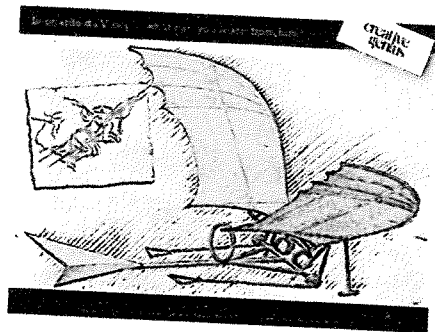
## Text 4

In Leonardo's time there were no bikes, no cars and certainly no aeroplanes. The idea of a flying machine would have been thought ridiculous. But Leonardo designed an invention inspired by the flight of winged animals, probably bats.

His notes are full of drawings of birds in flight and they are also full of plans for flying machines. He invented: a helicopter, a hang-glider, a parachute and even a giant set of wings to be strapped on to a man. The design for this last invention is clearly inspired by the flight of winged animals, probably bats. In fact, in his notes, he mentions bats, kites and birds as sources of inspiration.

Leonardo da Vinci's flying machine had a wingspan that exceeded 10 metres, and the frame was to be made of pine covered in raw silk to create a light but sturdy membrane.

The pilot would lie face down in the centre of the invention on a board, his waist would be inside the **ring** just below the wings. To power the **wings**, the pilot would pedal a **crank** and at the same time his hands would hold the two **hand cranks** for increased energy output. As the busy pilot spins cranks with his hands and feet, the wings of the machine flap.



Did Leonardo actually build any wings? Did anyone try them out? Nobody is sure. In the notebooks, he mentions testing the wings on a hill near Florence. If so, he may have jumped from the top of the hill and glided in the air for a little while. But he could not have flown. The wings would not have worked, for more than one reason. First they were far too heavy. Also, it takes a lot of force to lift a heavy object off the ground and keep it in the air. The force from one human's muscle power wasn't strong enough. In Leonardo's day, engines with strong power had not yet been invented.

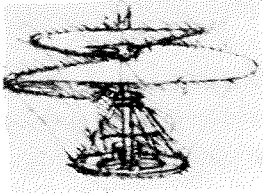
Of course, Leonardo was right. People did learn to make flying machines. But it didn't happen until December of 1903. That is when the Wright brothers airplane flew for twelve seconds. That was almost four hundred years after Leonardo died. He was a man way ahead of his time.

**Crank:** a device that creates movement between parts of a machine or that changes backwards and forward movement into circular movement.

**Text 4 Questions**

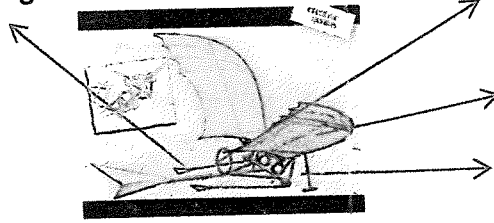
**Read text four again and answer the questions below:**

1. Write the name of each invention under each diagram. Names of inventions: helicopter, parachute, wings for a man, hang-glider ( 4 marks)

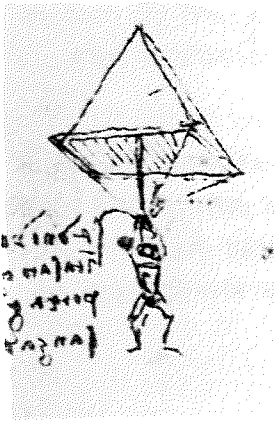


2.

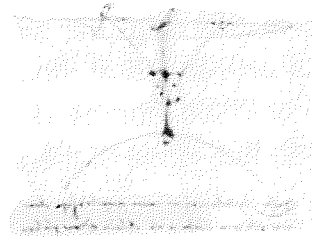
1. \_\_\_\_\_



2. \_\_\_\_\_



3. \_\_\_\_\_



4. \_\_\_\_\_

2. Write the name of each of the above inventions next to the appropriate definition: ( 4 marks)

- a) A folding umbrella like fabric device with cords supporting a harness or straps for allowing a person, object, package to float down safely through the air from a great height. \_\_\_\_\_
- b) An aircraft that derives its lift from blades that rotate about an approximately vertical central axis. \_\_\_\_\_
- c) A motorless heavier-than-air aircraft for gliding from a higher to a lower level by the action of gravity. \_\_\_\_\_
- d) An invention inspired by the flight of winged animals. To power the wings the pilot would pedal a crank. \_\_\_\_\_

2. Leonardo's hang-glider and his parachute have been built in modern times and found to work. But the wings for a man didn't work. Why was that? ( 1 mark)

\_\_\_\_\_

3. Read text 4 again and label four parts of the wings for a man.( 4 marks)